

Operator Training

Statistical Inventory Reconciliation

D H E C



PROMOTE



PROTECT



PROSPER

South Carolina Department of Health
and Environmental Control

Release Detection

- Means watching the tank system on a routine basis so that if a release occurs, it will be discovered as quickly as possible
- All tanks are required to have release detection except tanks that serve as emergency generators

Release Detection Requirement

Must use a method and/or equipment capable of finding a leak of 0.2 gallons per hour (gph) within 30 days

How much is 0.2 gallons
per hour??

Release Detection



A leak of 0.2 gallons per hour is the same as losing 2 cola cans worth of fuel in an hour

Release Detection

Release detection requires that we look for a 0.2 gph leak at least once every month...

$$0.2 \text{ gph} \times 24 \text{ hours} \times 30 \text{ days} = 144 \text{ gallons per month}$$

Statistical Inventory Reconciliation

MONTHLY INVENTORY RECORD

TANK IDENTIFICATION & TYPE OF FUEL: 4 MIDDLE GRADE UNL

MONTH/YEAR: 9/93

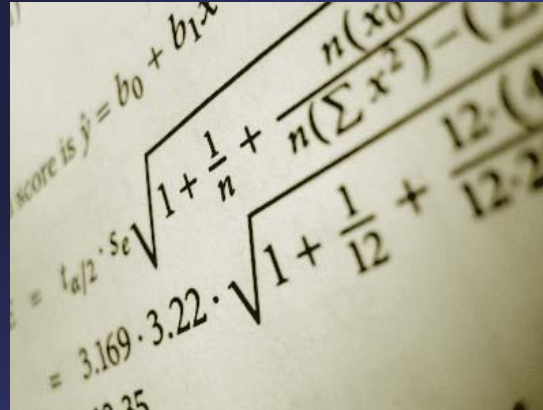
FACILITY NAME: LAST CHANCE #2

DATE OF WATER CHECK: 9/1

LEVEL OF WATER (INCHES): 0

TANK NO.	START STOCK INVENTORY		END STOCK INVENTORY		SALE OVER 12 MONTHS		TOTAL
	START	END	START	END	START	END	
1	400.5	400.5	388.0	388.0	388.0	388.0	-2.0
2	224.0	224.0	224.0	224.0	224.0	224.0	0.0
3	366.0	366.0	366.0	366.0	366.0	366.0	0.0
4	352.0	352.0	352.0	352.0	352.0	352.0	0.0
5	322.5	322.5	322.5	322.5	322.5	322.5	0.0
6	21.0	21.0	21.0	21.0	21.0	21.0	0.0
7	21.0	21.0	21.0	21.0	21.0	21.0	0.0
8	21.0	21.0	21.0	21.0	21.0	21.0	0.0
9	21.0	21.0	21.0	21.0	21.0	21.0	0.0
10	21.0	21.0	21.0	21.0	21.0	21.0	0.0
11	21.0	21.0	21.0	21.0	21.0	21.0	0.0
12	21.0	21.0	21.0	21.0	21.0	21.0	0.0
13	21.0	21.0	21.0	21.0	21.0	21.0	0.0
14	21.0	21.0	21.0	21.0	21.0	21.0	0.0
15	21.0	21.0	21.0	21.0	21.0	21.0	0.0
16	21.0	21.0	21.0	21.0	21.0	21.0	0.0
17	21.0	21.0	21.0	21.0	21.0	21.0	0.0
18	21.0	21.0	21.0	21.0	21.0	21.0	0.0
19	21.0	21.0	21.0	21.0	21.0	21.0	0.0
20	21.0	21.0	21.0	21.0	21.0	21.0	0.0
21	21.0	21.0	21.0	21.0	21.0	21.0	0.0
22	21.0	21.0	21.0	21.0	21.0	21.0	0.0
23	21.0	21.0	21.0	21.0	21.0	21.0	0.0
24	21.0	21.0	21.0	21.0	21.0	21.0	0.0
25	21.0	21.0	21.0	21.0	21.0	21.0	0.0
26	21.0	21.0	21.0	21.0	21.0	21.0	0.0
27	21.0	21.0	21.0	21.0	21.0	21.0	0.0
28	21.0	21.0	21.0	21.0	21.0	21.0	0.0
29	21.0	21.0	21.0	21.0	21.0	21.0	0.0
30	21.0	21.0	21.0	21.0	21.0	21.0	0.0
31	21.0	21.0	21.0	21.0	21.0	21.0	0.0
32	21.0	21.0	21.0	21.0	21.0	21.0	0.0
33	21.0	21.0	21.0	21.0	21.0	21.0	0.0
34	21.0	21.0	21.0	21.0	21.0	21.0	0.0
35	21.0	21.0	21.0	21.0	21.0	21.0	0.0
36	21.0	21.0	21.0	21.0	21.0	21.0	0.0
37	21.0	21.0	21.0	21.0	21.0	21.0	0.0
38	21.0	21.0	21.0	21.0	21.0	21.0	0.0
39	21.0	21.0	21.0	21.0	21.0	21.0	0.0
40	21.0	21.0	21.0	21.0	21.0	21.0	0.0
41	21.0	21.0	21.0	21.0	21.0	21.0	0.0
42	21.0	21.0	21.0	21.0	21.0	21.0	0.0
43	21.0	21.0	21.0	21.0	21.0	21.0	0.0
44	21.0	21.0	21.0	21.0	21.0	21.0	0.0
45	21.0	21.0	21.0	21.0	21.0	21.0	0.0
46	21.0	21.0	21.0	21.0	21.0	21.0	0.0
47	21.0	21.0	21.0	21.0	21.0	21.0	0.0
48	21.0	21.0	21.0	21.0	21.0	21.0	0.0
49	21.0	21.0	21.0	21.0	21.0	21.0	0.0
50	21.0	21.0	21.0	21.0	21.0	21.0	0.0
51	21.0	21.0	21.0	21.0	21.0	21.0	0.0
52	21.0	21.0	21.0	21.0	21.0	21.0	0.0
53	21.0	21.0	21.0	21.0	21.0	21.0	0.0
54	21.0	21.0	21.0	21.0	21.0	21.0	0.0
55	21.0	21.0	21.0	21.0	21.0	21.0	0.0
56	21.0	21.0	21.0	21.0	21.0	21.0	0.0
57	21.0	21.0	21.0	21.0	21.0	21.0	0.0
58	21.0	21.0	21.0	21.0	21.0	21.0	0.0
59	21.0	21.0	21.0	21.0	21.0	21.0	0.0
60	21.0	21.0	21.0	21.0	21.0	21.0	0.0
61	21.0	21.0	21.0	21.0	21.0	21.0	0.0
62	21.0	21.0	21.0	21.0	21.0	21.0	0.0
63	21.0	21.0	21.0	21.0	21.0	21.0	0.0
64	21.0	21.0	21.0	21.0	21.0	21.0	0.0
65	21.0	21.0	21.0	21.0	21.0	21.0	0.0
66	21.0	21.0	21.0	21.0	21.0	21.0	0.0
67	21.0	21.0	21.0	21.0	21.0	21.0	0.0
68	21.0	21.0	21.0	21.0	21.0	21.0	0.0
69	21.0	21.0	21.0	21.0	21.0	21.0	0.0
70	21.0	21.0	21.0	21.0	21.0	21.0	0.0
71	21.0	21.0	21.0	21.0	21.0	21.0	0.0
72	21.0	21.0	21.0	21.0	21.0	21.0	0.0
73	21.0	21.0	21.0	21.0	21.0	21.0	0.0
74	21.0	21.0	21.0	21.0	21.0	21.0	0.0
75	21.0	21.0	21.0	21.0	21.0	21.0	0.0
76	21.0	21.0	21.0	21.0	21.0	21.0	0.0
77	21.0	21.0	21.0	21.0	21.0	21.0	0.0
78	21.0	21.0	21.0	21.0	21.0	21.0	0.0
79	21.0	21.0	21.0	21.0	21.0	21.0	0.0
80	21.0	21.0	21.0	21.0	21.0	21.0	0.0
81	21.0	21.0	21.0	21.0	21.0	21.0	0.0
82	21.0	21.0	21.0	21.0	21.0	21.0	0.0
83	21.0	21.0	21.0	21.0	21.0	21.0	0.0
84	21.0	21.0	21.0	21.0	21.0	21.0	0.0
85	21.0	21.0	21.0	21.0	21.0	21.0	0.0
86	21.0	21.0	21.0	21.0	21.0	21.0	0.0
87	21.0	21.0	21.0	21.0	21.0	21.0	0.0
88	21.0	21.0	21.0	21.0	21.0	21.0	0.0
89	21.0	21.0	21.0	21.0	21.0	21.0	0.0
90	21.0	21.0	21.0	21.0	21.0	21.0	0.0
91	21.0	21.0	21.0	21.0	21.0	21.0	0.0
92	21.0	21.0	21.0	21.0	21.0	21.0	0.0
93	21.0	21.0	21.0	21.0	21.0	21.0	0.0
94	21.0	21.0	21.0	21.0	21.0	21.0	0.0
95	21.0	21.0	21.0	21.0	21.0	21.0	0.0
96	21.0	21.0	21.0	21.0	21.0	21.0	0.0
97	21.0	21.0	21.0	21.0	21.0	21.0	0.0
98	21.0	21.0	21.0	21.0	21.0	21.0	0.0
99	21.0	21.0	21.0	21.0	21.0	21.0	0.0
100	21.0	21.0	21.0	21.0	21.0	21.0	0.0
TOTAL	6554	6554	6554	6554	6554	6554	0.0

+



Statistics

+



Computer Analysis

=

PASS, INCONCLUSIVE, OR FAIL

Statistical Inventory Reconciliation (SIR) is a method of release detection that uses a third party certified computer software program to conduct statistical analysis of inventory, delivery, and dispensing data.

Statistical Inventory Reconciliation



Data needed for SIR:

- Daily fuel level measurements to the nearest 1/8th inch
- Fuel measurements before and after each delivery
- Water level measurements
- Meter totalizer readings

Data must be collected daily and analyzed every month. Data can be gathered by “sticking” the tank manually or by using inventory data from an Automatic Tank Gauge.

Statistical Inventory Reconciliation

At the end of the month, all collected information is sent off to the SIR vendor. The vendor will then return the analysis of the data by the middle of the next month. The analysis will be a result of Pass, Fail, or Inconclusive. The operator must read and evaluate all SIR reports. Every Fail or Inconclusive SIR result must be reported to the Department within 72 hours. The owner/operator must investigate the non-passing result and report the results of the investigation to the UST Compliance Section.



Read every SIR report
when you receive it!

Statistical Inventory Reconciliation

Inconclusive means that the data supplied was not sufficient enough to make a determination of Pass or Fail.

Reasons for Inconclusive:

- Not measuring to 1/8th inch
- Missing the plastic button on the bottom of a gauge stick
- Incorrect tank chart
- Not recording a delivery

An Inconclusive results in effect means that the owner did not provide adequate release detection for the month.

Statistical Inventory Reconciliation

Monthly Statistical Inventory Reconciliation (SIR) Report

Facility Name		SCDHEC ID#:
Tank Location	Address:	City:
	Phone: ()	Zip:
Tank Owner	Name:	
	Address:	
	City:	Phone: ()
Tank Operator	Name:	Phone: ()
SIR Provider		Phone: ()
SIR Version		Date of SIR report
Period Covered	What is the required number of usable inventory days per tank?	

Tank Number	Tank Contents	Tank Capacity gallons	This Month						Last Month			Two Months Ago		
			Leak Threshold	Minimum Detectable Leak Rate	Calculated Leak Rate	Pass, Fail, Inconclusive			Pass, Fail, Inconclusive			Pass, Fail, Inconclusive		
			gph	gph	gph	P	F	I	P	F	I	P	F	I

- The tank owner is required to have a SIR report for each month.
- The tank owner is required to have the report by the 20th day of the following month.
- SCDHEC must be notified of any result other than a "pass" within 72 hours of receipt of the report (803-896-6240 or 1-800-826-5435 in SC).
- For any result other than a "pass," the tank owner is required to complete the SIR provider's investigative process and report the findings to SCDHEC within 7 days. FAILURE TO COMPLY WITH THIS STEP WILL RESULT IN AN AUTOMATIC REQUIREMENT TO PRECISION TEST THE TANK SYSTEM.
- If the above investigation indicates a suspected release perform a precision test on tank and piping. Submit testing results and SIR monthly report to SCDHEC within 3 days of the test date.
- Two consecutive results other than a "pass" require a tank and piping precision test within five days of receipt of the second report.
- Definitions:
 "Pass" - calculated leak rate for the data set is less than the leak threshold and the minimum detectable leak rate is less than or equal to the certified performance standard (0.2 gph).
 "Fail" - calculated leak rate for the data is equal to or greater than the leak threshold.
 "Inconclusive" - minimum detectable leak rate exceeds the certified performance standard (0.2 gph) and the calculated leak rate is less than the leak threshold. If for any other reason the test result is not a "Pass" or "Fail", the result is inconclusive.
- A leak threshold, minimum detectable leak rate, and calculated leak rate must be provided for each tank. If not, then the tank failed the SIR test.

Person conducting evaluation	
Signature (optional)	Date

The release detection requirement for tanks requires a passing SIR result for each tank for the most recent 12 months. There should be 12 pages like the one shown here on file at all times.

Statistical Inventory Reconciliation



006 SIR Monthly Tank Evaluation Report Date of Report: Unavailable

FACILITY NAME _____ ID#: _____

TANK LOCATION _____ Tel: _____

TANK OWNER LOCATION _____ Tel: _____

TANK OPERATOR _____ Tel: _____

SIR Provider TotalSIR, P.O. Box 2040, Cornelius, NC 28031

SIR Version TotalSIR V1.0 <ID: SIR71005> Site Dir: _____

Period Covered 11/06 23 usable days per month required.

TANK				Current Month		10/06	09/06
Tank ID.	Product	Max. SIR size (gal)	Size (gal)	Leak Thresh-hold (gph)	MDL rate (gph)	Calc. Leak rate (gph)	Pass, Fail, or Inconclusive
							P F I P F I P F I
Anglers12/Un	UNLEAD	45 K	8023	0.150	0.100	0.238	X X X
Anglers12/Un	Manifolded	45 K	8023	0.150	0.100	0.238	X X X
Anglers12/Pr	PREMIUM	45 K	8017	0.150	0.100	0.150	X X X
Anglers12/De	DIESEL	45 K	8023	0.145	0.109	0.281	X X X

Failing SIR results for two months

After two consecutive fails and/or inconclusive results, a tank tightness test and line tightness test must be performed.

EZY 3 LOCATOR PLUS FINAL REPORT
MANUFACTURED BY LEAKBOOTS INC. 1-877-333-7111

DATE: 09/06 FBI # (NEW YORK) _____
TOTAL TANK VOL: 8000 GALLONS TANK # 1
PRODUCT VOL: _____ LOCATION _____
LEAKAGE VOL: _____
PRODUCT TYPE: Regular

THE ACOUSTIC CHARACTERISTIC OF A LEAK REVEALS:
X TIGHT TANK
THIS UNDERGROUND STORAGE TANK PASSES THE CRITERIA SET FORTH BY THE U.S. EPA.
ULLAGE (DRY) PORTION LEAK
THIS UNDERGROUND STORAGE TANK FAILS THE CRITERIA SET FORTH BY THE U.S. EPA.
BELOW PRODUCT LEVEL (WET) PORTION LEAK
THIS UNDERGROUND STORAGE TANK FAILS THE CRITERIA SET FORTH BY THE U.S. EPA.

WATER SENSOR INDICATES:
(CHECK ONLY ONE)
NO WATER INTRUSION _____ WATER INTRUSION _____ NOT APPLICABLE _____ X

Operator Information:
Print Name _____ Certification # _____
Sign Name _____ Expiration Date _____
Testing Firm _____ Telephone # _____
Address _____

NEW YORK STATE REQUIREMENT: A DIAGRAM OF THE TANK SYSTEM MUST BE SUBMITTED TO THE STATE WITH THIS REPORT.

Tank Tightness Test

ACURITE / FTA
Line/LD Test Data Sheet

COMPANY _____ TEST NUMBER _____
LOCATION _____ TEST DATE 6/9/2008
ADDRESS _____ TECHNICIAN _____
CITY / STATE _____ CERTIFICATION _____

LINE TEST				
Product	Regular	Mid Grade	Premium	Kerosene
STP MFG	Red Jacket	Red Jacket	Red Jacket	Red Jacket
Isolation	B-Valve	B-Valve	B-Valve	B-Valve
Test Pressure	45	45	45	45
Initial Level	.0800	.0800	.0800	.0950
Final Level	.0800	.0800	.0800	.0950
Leak Rate	.000	.000	.000	.000
Start Time	15:45	15:45	15:45	16:50
End Time	16:15	16:15	16:15	17:20
Test Time	30	30	30	30
Result	Pass	Pass	Pass	Pass

LD TEST			
LD Model	ELD	ELD	ELD
Result	Pass	Pass	Pass
New LD Model			
Result			

COMMENTS

Line Tightness Test